

been removed the inside of the larva should be thoroughly washed with water. The specimen may then be injected with one of the fluids listed below.

*Melted paraffin*—A needle with a large diameter must be used. This material produces excellent results. Care must be taken, however, that the paraffin is not so hot that it scorches the tissue or discoloration will result.

*Formalin and Plaster of Paris*—Use a needle with a large diameter, or a medicine-dropper in this case. The results are very good, but the best results are obtained on large larvae. The formalin (40%) and plaster of Paris are mixed into a thin paste. This paste hardens in a short period and the work therefore must be done rapidly.

*Celluloid dissolved in acetone*—Use a needle with a large diameter. The results are quite good, although a slight over-shrinking follows.

It must be noted that none of these fluids will prevent discoloration completely, nor will the brighter colors of the larvae be preserved entirely. Some, however, tend to discolor more than others and this must be correlated with the preserving power of the fluids.

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### **On a Family of Coleoptera new to the Fauna of North America with Description of One New Species (Gnostidae).**

By W. S. BLATCHLEY, Indianapolis, Indiana.

On March 7, 1927, while collecting two miles east of Dunedin, Florida, I beat into an umbrella, from a large mass of Spanish moss attached to the limb of a dead pine snag, a small brown beetle which I at once recognized as new to my collection. On examining it closely that evening I found that I could not place it definitely in any of the known families of North American Coleoptera. It had but three segments in each antenna and resembled somewhat some of the Pselaphids belonging to the genera *Adranes* and *Fustiger*, but the tarsi were 5-jointed and the elytra entire and covering the abdomen.

On returning to Indianapolis in April I again gave it careful study, but was unable to identify it from any of the literature in my library. I then sent it to H. C. Fall, of Tyngsboro, Massachusetts, and later to Chas. Schaeffer, of Brooklyn, New York, two of the best Coleopterists in eastern North America, but both of them passed it up as a "strange and aberrant form," wholly unknown to them even as to family. Both suggested that the antennae had been broken off, leaving only the basal segments remaining, but this I doubted, as they had every appearance of being in normal condition.

In August, 1929, I took the specimen with me to New York City and showed it to Chas. W. Leng and A. J. Mutchler, but they could only guess as to its family relationships. Mr. H. S. Barber, of the U. S. National Museum, happened at that time to be at the Brooklyn Museum and as I had the specimen in a box with others which I wished to compare with those in the Schaeffer collection, I showed it to him. He at once recognized it as belonging to the family Gnostidae, as he had recently seen examples of that family taken by Dr. Wm. M. Mann from the nests of ants in the Panama Canal Zone. By referring to the available literature at hand, we soon found that it belonged to the genus *Gnostus* founded by Westwood in 1855,<sup>1</sup> the genotype being *G. formicicola* Westw., taken by Henry Walter Bates from the nest of an ant, *Myrmica* (*Crematogaster*) *victima* Smith, near Santarem,<sup>2</sup> Brazil. Of this ant and beetle Bates, the collector, wrote: "The ant, neuter and female, had its formicarium formed in hollow, dried suspended sipos;<sup>3</sup> only one female in each formicarium. This ant has a small species of beetle (Paussidae) almost invariably in its company, one or at most two, in each colony. No beetle was found in any part of the sipos not inhabited by the *Myrmica*."

One other species of the genus, viz., *Gnostus meinerti* Wasmann, has since been described<sup>4</sup> from Valencia, Venezuela. It was found in the nest of the ant, *Crematogaster limata* Sm. Wasmann gives characters showing that it is very different from

<sup>1</sup> Trans. Entom. Soc. Lond., III, 1855, p. 90, pl. 8.

<sup>2</sup> A city on the Amazon, about half way up the river to Manaos.

<sup>3</sup> A kind of vine.

<sup>4</sup> Krit. Verzeichniss der Myrmekophilen und Termitophilen Arthropoden, Berlin, 1894, p. 216.

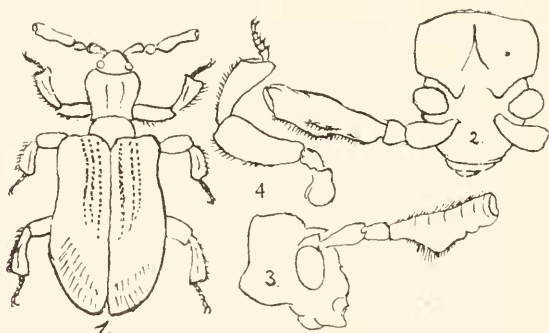
Westwood's species, as well as from the one found in Florida.

Westwood's long Latin diagnosis of the genus *Gnostus* includes also the structural characters of his species, *G. formicicola*. Freely translated, the principal characters of genus and species as given by him are as follows, those portions pertaining to the antennae and prothorax being included verbatim in the original Latin:

"Body minute, convex. Head small, immersed in thorax to the eyes, anteriorly rounded, subporrect.

"Antennae paullo ante angulos internos oculorum insertae, pronoto breviores subcylindricae; articulo 1mo subclavato, curvato, apice oblique truncato, articulo 2do in angulum inferum truncaturae apicalis articuli basalis inserto, basi gracili supra in angulum subacutum producto, articulo 3tio elongato, cylindrico apice truncato, subtus fere ad medium in angulum obtusum producto; hoc articulo, certo situ, quasi ex articulis sex arctissime conjunctis apparenti.

"Labrum small, transverse, angulate-produced in front. Maxillae minute, not bilobed; maxillary palpi 3-jointed, joint 3 largest, its middle slightly oval-inflated, apex acute. Labial palpi minute, 3-jointed, joint 1 annuliform; 2 curved, attenuate; 3 oval, apex subacute without setae.



1. *Gnostus formicicola* Westw.; 2, head from above; 3, head from the side; 4, front-leg. (After Westwood. Courtesy of Chas. W. Leng.)

"Prothorax oblongus, quasi in duas partes valde inaequales (postica multo minori) impressione divisus, pars antica capite multo latior; fossulis duobus paullo curvatis, longitudinalibus in discum notatus, lateribus rotundatis, in parte constricta

utrinque in hamis duos apicibus acutis fere conjunctis productis; parte postica transversa fere anticae latitudine aequali.

"Elytra large, more than twice the width of thorax, humeral angles rectangular, sides subparallel, tips rounded covering the abdomen; disc convex, glabrous, slightly setose, punctate-striate. Legs short, femora subclavate, tibiae compressed, slightly curved; tarsi short, all simple 5-jointed, joint 5 slightly the longer, slender. Abdomen with three visible segments, segment 1 very large, 2 very short, 3 medium, subtriangular."

The brief Latin description of his genotype is as follows:

"*Gnostus formicicola* Westw. Omino rufo-castaneus, nitidus, corpore et pronoto glabris; elytris punctato-striatis, corpore infra polito impunctato convexo. Long. corp. lin. 1 = 1/12 unc. = 2 mm."

The specimen taken by me in Florida apparently differs from Westwood's species in characters pertaining to the antennae, and in the sculpture of thorax and elytra. It is therefore described as follows:

***Gnostus floridanus* sp. nov.**

Oblong, subcylindrical. Uniform dark reddish-brown, strongly shining. Antennae much as described by Westwood, the joints with fine scattered setae; joint 2 subglobose, one-half the length of 1; joint 3 as long as 1 and 2 united, gradually but feebly clavate, its apex truncate and under side with a very slight submedian angulation. Front lobe of prothorax with a wide and deep median groove lying between two very distinct, feebly divergent dorsal ridges, the posterior ends of these ridges thickened and projecting over the feeble transverse impression separating the two lobes of thorax. Elytra about three-fourths wider than front lobe of thorax; umbones prominent; disc without striae but with rows of very small scarcely impressed punctures, each puncture bearing a very fine short inclined yellowish seta, both punctures and setae visible only under high magnification. Length 1.6 mm.

*Type* a unique (sex undetermined) in the author's collection, taken near Dunedin, Florida, March 7, 1927.

Search for additional specimens in ants' nests and by beating other bunches of Spanish moss in the immediate vicinity of the type habitat has so far failed.

I have been unable as yet to definitely ascertain who first used the family name Gnostidae for the genus *Gnostus*.

Nathan Banks, who kindly looked up the matter for me, states that: "Very possibly it is due to Gemminger and Von Harold, in vol. I, of their Catalogue, 1868, p. 700." However, they there did not characterize the family but used the name Gnostidae as a family heading and placed under it three genera, viz., *Ectrephes* Pascoe; *Gnostus* Westwood and *Anapestus* King. King's name is now considered a synonym of *Ectrephes* and for this the family name Ectrephidae is now used, thus leaving *Gnostus* alone in Gnostidae.

Westwood, in the notes following his original characterization, after showing that *Gnostus* could not belong to the Paussidae, where it was originally placed by Bates adds: "Its nearest allies appear to be found amongst some of those Nylophaga of Latreille which possess 5-jointed tarsi, but it stands sufficiently detached from the whole of them as to constitute a distinct subfamily of its own." However, he gives neither a subfamily nor family name.

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**Muscina stabulans Fall. (Diptera: Muscidae) Parasitic on  
*Arachnara subcarnea* Kell. (Lepidop.: Noctuidae).**

At Toledo, Ohio on July 27, 1928 the author collected a pupa of *Arachnara subcarnea* Kell. in a stalk of *Typha latifolia*, which appeared to be parasitized. Two parasitic larvae emerged from the pupa on Aug. 11 and pupated externally, one emerging on Aug. 19 and the other on Aug. 20. These adults were determined by Dr. J. M. Aldrich of the U. S. National Museum at Washington as *Muscina stabulans* Fall. (The stable fly.)

The host pupa appeared in the stalk at the end of its larval burrow, about four inches under the surface of the water.

The author has observed on several occasions adult *Muscina stabulans* flying around *Typha latifolia* infested with *Arachnara subcarnea* but egg-laying was not observed. Inasmuch as the host larvae enter the *Typha* leaves at the tip, it is entirely possible that they were parasitized in this instar.

I believe this is the first recorded observation of a distinct parasitic habit of *Muscina stabulans*, and rearing experiments with this host should prove interesting.

Both the adult parasites and their pupal cases are now in my personal collection. —A. C. COLE, JR., Ohio State University, Columbus, Ohio.